REMARKS

After entry of the foregoing amendments, claims 1-4 and 6-13 are all of the claims currently pending in this application. By the foregoing amendment, claim 5 is cancelled.

STATUS OF CLAIMS:

Claims 1-4 and 6-13 are rejected.

ELECTION/RESTRICTIONS:

The Examiner acknowledges Applicants' election without traverse of species 1 (claims 2-4) in Paper No. 9. The Examiner has withdrawn claim 5 from further consideration as being drawn to a non-elected species.

DRAWINGS:

In order to overcome the Examiner objections to the drawings due to various informalities, Applicants submit concurrently herewith a Request for Approval of Proposed Drawing Corrections. Approval of the requested changes in due course is respectfully requested.

In response to the Examiner's objection to the drawings as failing to comply with 37 C.F.R. §1.84(p)(5) because the reference characters Wc' and Wb' (Fig. 20b) are not mentioned in the description, Applicants hereby amend page 62, line 3 of the specification to represent these

reference characters. Accordingly, withdrawal of this objection to the drawings is respectfully requested.

Under Section 5(b) of the Office Action, the Examiner further asserts that the drawings do not include various reference signs that are mentioned in the description. In particular, the Examiner notes that the dimensions D1 and D2 are described on page 62, lines 9 and 11, but not shown in the drawings. Accordingly, Applicants amend Fig. 20B to represent these dimensions, as shown in the attached Request for Approval of Proposed Drawing Corrections.

With respect to the Examiner's assertion that elements 35a, 45a, and 55a are not shown in the drawings, Applicants respectfully direct the Examiner's attention to Figs. 22A, 23A and 24A, wherein these elements are shown. The specification is also amended to describe these elements as being an area that is filled with a high-polymer material, such as polyethylene, in which some quantity of carbon black or other pigment is dispersed. This description is similar to that used for elements 15a and 25a, as shown in Figs. 1A and 17A, and described on page 25, line 26; and page 57, line 15.

The Examiner asserts that element e2, as shown in Figs. 25A and 27A, is not described in the specification. Accordingly, Applicants have removed this reference character from the drawings.

SPECIFICATION:

In order to overcome the Examiner's objections to the disclosure due to various informalities, the specification is hereby amended. Accordingly, Applicants respectfully request withdrawal of these objections.

35 U.S.C. §102:

The Examiner rejects claims 1, 4, 8, 11 and 13 under 35 U.S.C. §102(b) as being anticipated by Tsuji et al. (U.S. Patent 5,196,702 [hereinafter "Tsuji"]). Applicants respectfully traverse this rejection in view of the following remarks.

Rejections under 35 U.S.C. §102 are proper only when each element of the claimed subject matter is disclosed in the cited reference. Tsuji fails to teach or suggest each element of the claimed subject matter. Claim 1 is directed to a novel combination of elements that form a new and unobvious radiation solid-state detector. These elements are neither disclosed nor rendered obvious by Tsuji. For example, and not by limitation, Tsuji does not disclose a "second electrode layer" and a "first conductive member," as separate elements, as recited in claim 1. The failure of Tsuji to disclose both a second electrode layer and a first conductive member is demonstrated by the Examiner's application of the single element 105, of Tsuji, against both the second electrode layer and the first conductive member. (See page 5, lines 1-7 of the Office Action.)

Element 105 of Tsuji is disclosed as being "a second electrode having a high transparency to the reading light 110 emitted from the optical source 107." (See col. 11, lines 58-60.) During a recent teleconference between the Examiner and the undersigned attorney, the Examiner further clarified his position with regard to element 105 by stating that he was treating the claimed second electrode layer and the first conductive member as the same element because of the recitations of claim 4. It appears that because claim 4 recites that "said first conductive member is provided in said second electrode layer," the Examiner was under the impression that these two elements were intended to represent the same element.

Applicants submit that the recited second electrode layer and the first conductive member are not the same element and are separately recited in claim 1. Because the Examiner's confusion appears to stem from claim 4, the Examiner's attention is respectfully directed to an embodiment such as the one shown in Fig. 18A. This figure shows a second electrode layer 25 and a sub-electrode 27a (or a first conductive member) in the second electrode layer 25. The electrode of the second electrode layer 25 is a stripe electrode 26a. (See page 60, lines 14.) The sub-electrode 27a and the strip electrodes 26a are separated by, for example, an area 25a filled with a high-polymer material. Thus, as a non-limiting example, and as shown in the embodiment of Fig. 18A, a first conductive member is provided in the second electrode layer; however, the second electrode layer is not the same element as the first conductive member.

Accordingly, Applicants respectfully submit that the disclosure of a second electrode layer 105 in Tsuji does not teach both the recited second electrode layer and the first conductive member of the present invention. Because both of these elements are not taught or suggested, Tsuji does not disclose each element of the claims, and the rejection under 35 U.S.C. §102 of claims 1, 4, 8, 11 and 13 should be withdrawn.

With regard to claim 11, the Examiner contends that the method is similar due to purported identity of structure between the invention and the applied reference. However, Tsuji does not include all of the claimed features for at least the reasons discussed above for claim 1.

35 U.S.C. §103 - Claims 2, 3, 9, 10 and 12:

The Examiner rejects claims 2, 3, 9, 10 and 12 under 35 U.S.C. §103(a) as being unpatentable over Tsuji in view of Swank et al. (U.S. Patent 4,085,327 [hereinafter "Swank"]). Applicants respectfully traverse this rejection in view of the following remarks.

The Examiner relies on Swank for an alleged teaching of a "conductive member disposed substantially traverse to or spaced from a stripe electrode." (See page 7, lines 3-6, of the Office Action.) The Examiner then asserts that it would have been obvious to "space the first conductive member from the stripe electrode (i.e., second electrode layer 105) in the radiation solid-state detector of Tsuji." However, Applicants submit that because Tsuji fails to teach both a second electrode layer and a first conductive member, the disclosure of Swank cannot be used to

space a non-existent first conductive member in Tsuji from the second electrode layer 105 of Tsuji.

Further, there is no motivation to place a conductive member of Swank into the device of Tsuji. The Examiner asserts that Swank teaches providing at least one conductive member disposed substantially traverse to or spaced from a stripe electrode. The Examiner is presumably relying on elements 18 of Swank to teach the at least one conductive member. Elements 18 are described as being a plurality of transparent conductive strips formed on a layer 17 of a transparent insulator. (See col. 3, lines 43-46.) Optical fibers 24 are taught to be disposed between a light source 26 and each of the conductive strips 18. When the light source 26 is activated, photons are conducted through each of the fibers 24 and the associated overlying transparent strips 18 to impinge upon the photoconductor material of layer 21. Thus, the transparent conductive strips 18 of Swank serve the purpose of impinging the light photons onto the photoconductive material. The device of Tsuji is designed and operated differently than the 1978 invention of Swank, and does not have a need for the transparent conductive strips of Swank. Thus, one skilled in the art would not have been taught or suggested to use the conductive strips of Swank in the device of Tsuji in a manner that teaches or suggests the present invention.

Thus, the combination of the applied references does not teach or suggest all of the claimed features, and there is no motivation to combine the references in a manner that does teach the claimed features. Consequently, Applicants respectfully submit that claims 2, 3, 9, 10

and 12 are patentable over Tsuji in view of Swank, and the rejection of these claims under 35 U.S.C. §103(a) should be withdrawn.

35 U.S.C. §103 - Claim 6:

The Examiner rejects claim 6 under 35 U.S.C. §103(a) as being unpatentable over Tsuji in view of Kempter (U.S. Patent 4,535,468). Applicants respectfully traverse this rejection in view of the following remarks.

The Examiner turns to Kempter for an alleged teaching of a charge transporting layer, in an effort to teach the recitations of claim 6. Applicants submit that claim 6 is patentable over Tsuji in view of Kempter because Kempter fails to make up for the deficient teaching of Tsuji in regard to claim 1. Thus, claim 6 is patentable over the applied references at least due to its dependency on independent claim 1, in addition to its individual recitations.

Claim amendments:

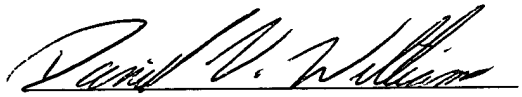
Claim 3 is amended to recite "said photoconductive layer for recording which **faces** said photoconductive layer for reading." This amendment is made for clarification of language, and not for statutory or prior art reasons.

In view of the preceding amendments and remarks, reconsideration and allowance of this application are earnestly solicited. If any points remain in issue that the Examiner feels may be

best resolved through a personal or telephone interview, he is kindly requested to contact the undersigned attorney at the local telephone number listed below.

A Petition for Extension of Time with appropriate fee accompanies this document. Please charge any additional fees due (except the Issue Fee and/or Publication Fee) to our Deposit Account No. 19-4880.

Respectfully submitted,



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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The specification is changed as follows:

Page 24, second full paragraph:

As the substance for the charge transporting layer 13, organic compounds, such as poly-*n*-vinyl carbazole (PVK), N,N-diphenyl-N,N-bis (3-methyl phenyl)-[1,1'-biphenyl-]4,4'-diamine (TPD), and dyscotic liquid crystal, a dispersed system of TPD in polymer (polycarbonate, polystyrene, or [PUK] PVK), and semiconductor substances, such as a-Se doped with C1 at 10 to 200 ppm, are suitable, because the greater the difference between the mobility of the negative charge, for example, stored in the electrode layer 11, and that of the positive charge, which is opposite in polarity to it, (for example, 10^2 or over, preferably 10^3 or over), the better. Particularly, organic compounds (such as PVK, TPD, and a dyscotic liquid crystal) are preferable because they have immunity to light, and because the dielectric constant is generally small, the capacitance of the charge transporting layer 13 and that of the photoconductive layer for reading, 14, are decreased, resulting in an increased efficiency of signal taking out when reading.

"Having immunity to light" means that they exhibit practically no conductivity when irradiated with the recording light L1 or the reading light L2.

Page 60, first paragraph:

FIG. 18A to FIG. 18C are drawings illustrating the schematic configuration of a radiation solid-state detector according to a eighth embodiment of the present invention, FIG. 18A being a perspective side view, FIG. 18B being an X-Z sectional drawing at the portion shown by arrow-Q, and FIG. 18C being an X-Y sectional drawing at the portion shown by arrow-P. In FIG. 18A to FIG. 18C, any element equivalent to that of the detector 20 according to the seventh embodiment as shown in FIG. 17A to FIG. 17C is provided with the same reference numeral, and the description about it will be omitted except when required. With this detector [20] 20a according to the eighth embodiment, the microplates 28 for the above-stated detector 20 are removed, and in recording, the stripe electrode 26 is connected to the sub-electrode 27 to positively utilize the sub-electrode 27 for formation of the electric field.

Page 61, first full paragraph:

FIG. 20A to FIG. 20C are drawings illustrating the schematic configuration of a radiation solid-state detector according to a ninth embodiment of the present invention, FIG. 20A being a perspective side view, FIG. 20B being an X-Z sectional drawing at the portion shown by arrow-

Q, and FIG. 20C being an X-Y sectional drawing at the portion shown by arrow-P. In FIG. 20A to FIG. 20C, any element equivalent to that of the detector 20 according to the seventh embodiment as shown in FIG. 17A to FIG. 17C is provided with the same reference numeral, and the description about it will be omitted except when required. With this detector 20b according to the ninth embodiment of the present invention, the microplates 28 for the above-stated detector 20 are removed, and the element 26a of the stripe electrode 26 and the element 27a of the sub-electrode 27 are alternately disposed in one pixel. With the detector 20b shown, three elements 26a and three elements 27a are provided in one pixel. When this detector 20b is used for recording and reading, it is recommended that the elements 26a and the elements 27a be handled in units of one pixel. Assuming that the size of one pixel for the detector 20 is the same as that for the detector 20b, the width W_b' of the element 26a and the W_c' of the element 27a for the detector 20b are set more narrowly than the width W_b and the W_c for the above-stated detector 20. Now that semiconductor formation technology is very advanced, it is easy to form both elements 26a and 27a sufficiently narrowly to manufacture the detector 20b.

Page 63, third full paragraph:

This detector 30 comprises an electrode layer 31, a photoconductive layer for recording, 32, a charge transporting layer 33, a photoconductive layer for reading, 34, and an electrode layer 35 which are stacked together in this order, providing a sub-electrode 37 at the boundary

between the photoconductive layer for reading, 34, and the charge transporting layer 33. As the substances for these layers, the substances for the detector 10, etc. according to the first embodiment are used. As with the detector 10, etc., the electrode of the electrode layer 35 is a stripe electrode 36 with which a number of elements 36a are arranged in the form of stripes, and microplates 38 which have roughly the same size as the pixel pitch are provided in a charge storing section 39, which is the boundary between the photoconductive layer for recording, 32, and the charge transporting layer 33. An area 35a is filled with a high-polymer material, such as polyethylene in which some quantity of carbon black or other pigment is dispersed.

Page 67, second full paragraph:

This detector 40 comprises an electrode layer 41, a photoconductive layer for recording, 42, a charge transporting layer 43, a photoconductive layer for reading, 44, and an electrode layer 45 which are stacked together in this order, providing a sub-electrode 47 in the charge transporting layer 43. As the substances for these layers, the substances for the detector 10, etc. according to the first embodiment are used. As with the detector 10, etc., the electrode of the electrode layer 45 is a stripe electrode 46 with which a number of elements 46a are arranged in the form of stripes, and microplates 48 which are effective to concentrate the latent image charges on the pixel central portion are provided in a charge storing section 49, which is the boundary between the photoconductive layer for recording, 42, and the charge transporting layer

43. An area 45a is filled with a high-polymer material, such as polyethylene in which some quantity of carbon black or other pigment is dispersed.

Page 69, second full paragraph:

This detector 50 comprises an electrode layer 51, a photoconductive layer for recording, 52, a charge transporting layer 53, a photoconductive layer for reading, 54, and an electrode layer 55 which are stacked together in this order, providing a sub-electrode 57 at the boundary between the photoconductive layer for recording, 52, and the charge transporting layer 53. As the substances for these layers, the substances for the detector 10, etc. according to the first embodiment are used. As with the detector 10, etc., the electrode of the electrode layer 55 is a stripe electrode 56 with which a number of elements 56a are arranged in the form of stripes. An area 55a is filled with a high-polymer material, such as polyethylene in which some quantity of carbon black or other pigment is dispersed.

Page 74, first full paragraph:

Further, with any of the detectors according to the above-stated embodiments, the photo-conductive layer for recording exhibits a conductivity when irradiated with the radiation for recording, but, the photoconductive layer for recording according to the present invention is not always limited to this, and the photoconductive layer for recording may be such that it exhibits a

conductivity when [irradiated with] irradiated with the light emitted by excitation on the radiation for recording (refer to Japanese Patent Application No. 10 (1998)-232824). In this case, on the surface of the first electrode layer must be stacked a wavelength conversion layer, known as an X-ray scintillator, which wavelength-converts the radiation for recording into light in the other wavelength region, such as blue light. As this wavelength conversion layer, it is preferable to use such a substance as cesium iodide (CsI). The first electrode layer must be permeable to the light emitted in the wavelength conversion layer by excitation on the radiation for recording.

IN THE CLAIMS:

Claim 5 is cancelled without prejudice and/or disclaimer.

The claims are amended as follows:

3. (Amended) A radiation solid-state detector according to claim 1, wherein said first conductive member is provided on the face of said photoconductive layer for recording which [is for] faces said photoconductive layer for reading.